# SPEC® CFP2006 Result

## Lenovo Group Limited

IBM NeXtScale nx360 M4
(Intel Xeon E5-2643 v2, 3.50 GHz)

<table>
<thead>
<tr>
<th>SPECfp®2006</th>
<th>104</th>
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<tbody>
<tr>
<td>SPECfp_base2006</td>
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**CPU2006 license:** 9017  
**Test date:** Oct-2014  
**Test sponsor:** Lenovo Group Limited  
**Hardware Availability:** Nov-2013  
**Tested by:** IBM Corporation  
**Software Availability:** Sep-2013

<table>
<thead>
<tr>
<th>Test</th>
<th>SPECfp</th>
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<tr>
<td>482.sphinx3</td>
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</table>

**Hardware**

- **CPU Name:** Intel Xeon E5-2643 v2  
- **CPU Characteristics:** Intel Turbo Boost Technology up to 3.80 GHz  
- **CPU MHz:** 3500  
- **FPU:** Integrated  
- **CPU(s) enabled:** 12 cores, 2 chips, 6 cores/chip  
- **CPU(s) orderable:** 1.2 chips  
- **Primary Cache:** 32 KB I + 32 KB D on chip per core  
- **Secondary Cache:** 256 KB I+D on chip per core

**Software**

- **Operating System:** Red Hat Enterprise Linux Server release 6.4 (Santiago)  
- **Compiler:** C/C++: Version 14.0.0.080 of Intel C++ Studio XE for Linux; Fortran: Version 14.0.0.080 of Intel Fortran Studio XE for Linux  
- **Auto Parallel:** Yes  
- **File System:** ext4

**Notes:**
- SPECfp and SPECfp_base2006 values are rounded to the nearest integer.
- CPU MHz values are rounded to the nearest integer.
- FPU values are rounded to the nearest integer.
- CPU(s) enabled values are rounded to the nearest integer.
- CPU(s) orderable values are rounded to the nearest integer.
- Primary Cache and Secondary Cache values are rounded to the nearest integer.

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SPEC CFP2006 Result

Lenovo Group Limited

SPECfp2006 = 104
SPECfp_base2006 = 100

CPU2006 license: 9017
Test sponsor: Lenovo Group Limited
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L3 Cache: 25 MB I+D on chip per chip
Other Cache: None
Memory: 128 GB (8 x 16 GB 2Rx4 PC3-14900R-13, ECC)
Disk Subsystem: 2 x 250 GB SATA, 7200RPM, RAID 0
Other Hardware: None

System State: Run level 3 (multi-user)
Base Pointers: 64-bit
Peak Pointers: 32/64-bit
Other Software: None

Results Table

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Seconds Base</th>
<th>Ratio</th>
<th>Seconds</th>
<th>Ratio</th>
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</table>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"
Zone reclaim mode enabled with:
echo 1 > /proc/sys/vm/zone_reclaim_mode
Intel Idle Driver disabled with the following Linux kernel parameter in /etc/grub.conf:
in.tel_idle.max_cstate=0

Platform Notes

BIOS setting:
Operating Mode set to Maximum Performance
Hyper-Threading set to Disable
Sysinfo program /home/SPECcpu-20140116-ic14.0/config/sysinfo.rev6874
$Rev: 6874 $ $Date:: 2013-11-20 #$ 654bd3fc53b06faef0efe54ed011998
running on nx360M4 Wed Oct 15 17:01:50 2014

Continued on next page
Platform Notes (Continued)

This section contains SUT (System Under Test) info as seen by some common utilities. To remove or add to this section, see:
http://www.spec.org/cpu2006/Docs/config.html#sysinfo

From /proc/cpuinfo
   model name : Intel(R) Xeon(R) CPU E5-2643 v2 @ 3.50GHz
                 2 "physical id"s (chips)
                 12 "processors"
   cores, siblings (Caution: counting these is hw and system dependent. The following excerpts from /proc/cpuinfo might not be reliable. Use with caution.)
   cpu cores : 6
   siblings : 6
   physical 0: cores 2 3 4 8 9 10
   physical 1: cores 2 3 4 8 9 10
   cache size : 25600 KB

From /proc/meminfo
   MemTotal: 132090624 kB
   HugePages_Total: 0
   Hugepagesize: 2048 kB

/usr/bin/lsb_release -d
   Red Hat Enterprise Linux Server release 6.4 (Santiago)

From /etc/*release* /etc/*version*
   redhat-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)
   system-release: Red Hat Enterprise Linux Server release 6.4 (Santiago)

uname -a:
   Linux nx360M4 2.6.32-358.el6.x86_64 #1 SMP Tue Jan 29 11:47:41 EST 2013
   x86_64 x86_64 x86_64 GNU/Linux

run-level 3 Oct 15 02:01

SPEC is set to: /home/SPECcpu-20140116-ic14.0
   Filesystem Type Size Used Avail Use% Mounted on
   /dev/mapper/vg_nx360m4-lv_home
      ext4 403G 14G 370G 4% /home

Additional information from dmidecode:

Warning: Use caution when you interpret this section. The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the "DMTF SMBIOS" standard.

BIOS IBM -[FHE107NUS-1.20]- 06/03/2014
Memory:
   8x Samsung M393B2G7QH0-CMA 16 GB 2 rank 1866 MHz, configured at 1867 MHz

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Platform Notes (Continued)

(End of data from sysinfo program)

General Notes

Environment variables set by runspec before the start of the run:
KMP_AFFINITY = "granularity=fine,compact,0,1"
LD_LIBRARY_PATH = "*/home/SPECcpu-20140116-ic14.0/1ibs/32:/home/SPECcpu-20140116-ic14.0/1ibs/64:/home/SPECcpu-20140116-ic14.0/sh"
OMP_NUM_THREADS = "12"

Binaries compiled on a system with 1x Core i7-860 CPU + 8GB memory using RedHat EL 6.4
Transparent Huge Pages enabled with:
echo always > /sys/kernel/mm/redhat_transparent_hugepage/enabled
runspec command invoked through numactl i.e.:
numactl --interleave=all runspec <etc>

Base Compiler Invocation

C benchmarks:
  icc   -m64
C++ benchmarks:
  icpc  -m64
Fortran benchmarks:
  ifort -m64

Benchmarks using both Fortran and C:
  icc   -m64 ifort -m64

Base Portability Flags

410.bwaves: -DSPEC_CPU_LP64
416.gamess: -DSPEC_CPU_LP64
433.milc: -DSPEC_CPU_LP64
434.zeusmp: -DSPEC_CPU_LP64
435.gromacs: -DSPEC_CPU_LP64 -nofor_main
436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
437.leslie3d: -DSPEC_CPU_LP64
444.namd: -DSPEC_CPU_LP64
447.dealII: -DSPEC_CPU_LP64
450.soplex: -DSPEC_CPU_LP64
453.povray: -DSPEC_CPU_LP64
454.calculix: -DSPEC_CPU_LP64 -nofor_main
459.GemsFDTD: -DSPEC_CPU_LP64
465.tonto: -DSPEC_CPU_LP64

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Base Portability Flags (Continued)

470.lbm: \texttt{-DSPEC\_CPU\_LP64}  
481.wrf: \texttt{-DSPEC\_CPU\_LP64 -DSPEC\_CPU\_CASE\_FLAG -DSPEC\_CPU\_LINUX}  
482.sphinx3: \texttt{-DSPEC\_CPU\_LP64}

Base Optimization Flags

C benchmarks:
\texttt{-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias}

C++ benchmarks:
\texttt{-xAVX -ipo -O3 -no-prec-div -opt-prefetch -ansi-alias}

Fortran benchmarks:
\texttt{-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch}

Benchmarks using both Fortran and C:
\texttt{-xAVX -ipo -O3 -no-prec-div -parallel -opt-prefetch -ansi-alias}

Peak Compiler Invocation

C benchmarks:
\texttt{icc -m64}

C++ benchmarks:
\texttt{icpc -m64}

Fortran benchmarks:
\texttt{ifort -m64}

Benchmarks using both Fortran and C:
\texttt{icc -m64 ifort -m64}

Peak Portability Flags

Same as Base Portability Flags

Peak Optimization Flags

C benchmarks:
\texttt{433.milc: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)}  
\texttt{-no-prec-div(pass 2) -prof-use(pass 2) -auto-ilp32 -ansi-alias}

Continued on next page
Peak Optimization Flags (Continued)

470.lbm: basepeak = yes

482.sphinx3: -xAVX -ipo -O3 -no-prec-div -unroll2 -ansi-alias
-parallel

C++ benchmarks:

444.namd: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -fno-alias
-auto-ilp32

447.dealII: basepeak = yes

450.soplex: basepeak = yes

453.povray: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll4 -ansi-alias

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -scalar-rep-

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -unroll2
-inline-level=0 -opt-prefetch -parallel

465.tonto: -xAVX(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)
-no-prec-div(pass 2) -prof-use(pass 2) -inline-calloc
-opt-malloc-options=3 -auto -unroll4

Benchmarks using both Fortran and C:

435.gromacs: basepeak = yes

436.cactusADM: basepeak = yes

454.calculix: -xAVX -ipo -O3 -no-prec-div -auto-ilp32 -ansi-alias

481.wrf: basepeak = yes
## Lenovo Group Limited

### Lenovo Group Limited

**IBM NeXtScale nx360 M4**

(**Intel Xeon E5-2643 v2**, **3.50 GHz**)

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The flags files that were used to format this result can be browsed at:

- [www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-C.html](http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-C.html)

You can also download the XML flags sources by saving the following links:

- [www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml](http://www.spec.org/cpu2006/flags/Intel-ic14.0-official-linux64.20140128.xml)
- [www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-C.xml](http://www.spec.org/cpu2006/flags/IBM-Platform-Flags-V1.2-IVB-C.xml)

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For questions about this result, please contact the tester.

For other inquiries, please contact webmaster@spec.org.

Tested with SPEC CPU2006 v1.2.


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